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Report
to the Minister
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to sections
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of the
Canada
Shipping Act
(1985)

Rapport
d'investigation
au Ministre
conformément
aux articles 477
ou 480 de la Loi
sur la marine
marchande
du Canada
(1985)

Canada

Ce rapport est aussi disponible en français.

REPORT OF INVESTIGATION INTO THE
CIRCUMSTANCES ATTENDING THE
LOSS OF THE CANADIAN FISHING VESSEL
"JOHNNY AND SISTERS II" WITH HER CREW,
IN THE ATLANTIC, SOUTH OF NEWFOUNDLAND,
DECEMBER 3-9, 1989

REPORT No. 543

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**REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES ATTENDING THE
LOSS OF THE CANADIAN FISHING VESSEL "JOHNNY AND SISTERS II"
WITH HER CREW, IN THE ATLANTIC, SOUTH OF NEWFOUNDLAND,
DECEMBER 3-9, 1989**

Particulars of Vessel

Name	"JOHNNY AND SISTERS II"
Port of Registry	Shelburne, N.S.
Call Sign	VY2990
Official Number	383702
Gross Tonnage	91.2
Net Tonnage	48.7
Length	18.84 m
Breadth	6.16 m
Depth	2.96 m
Draught (at time of casualty, estimated)	F. 0.9 m A. 2.75 m
Built	1978
Propulsion	Diesel, 272 kw single screw fixed-pitch propeller
Cargo	About 18,000 kg cod fish
Crew	8
Owners	Harry R. and Catherine S. Thorburn, Shelburne, N.S. BOT 1W0

Navigating Equipment

The following navigation equipment is reported as having been on board the "JOHNNY AND SISTERS II":

- 2 Radars
- 1 Echo Sounder
- 1 Loran C

- 1 R/T SSB
- 1 R/T VHF
- 1 C.B. R/T
- 1 Auto Pilot
- 1 Magnetic Compass

Background

- Note: 1. All times in this report are expressed in Atlantic Standard Time (UTC - 4 hours), unless otherwise indicated.
2. All references to the Canada Shipping Act in this report refer to Chapter S-9-1985 of the Revised Statutes of Canada.

The 19 m wooden fishing vessel "JOHNNY AND SISTERS II" departed the port of Louisbourg, Nova Scotia, November 24, 1989 fully provisioned for an extended longline fishing venture to the Grand Banks, south of Newfoundland.

During the period from about noon on December 1, 1989 to 1845 December 3, 1989 the "JOHNNY AND SISTERS II" fished in the same general area as the 28 m steel fishing vessel "7 GIRLS" and several radiotelephone communications took place between the two vessels.

At about 1845 December 3, 1989 in her last known communication, the "JOHNNY AND SISTERS II" advised the "7 GIRLS" she was departing that area for a further two days fishing on Banquereau Bank before heading back to port in Nova Scotia.

Nothing further was ever heard from the "JOHNNY AND SISTERS II". The body of one crewman was found and recovered by the clam dragger "SCOTIAN SURF", December 9, 1989 as that vessel was returning from the fishing grounds. During the next four days, except for a limited amount of debris, a full scale sea and air search failed to find any trace of the vessel or of her remaining seven crew members.

Particulars of Deceased

Name : Paul Douglas Boutet
Position on : Crewman
board ship
Age : 25
Address : Shelburne, N.S.

Particulars of Missing Persons

Name : Harry R. Thorburn
Position on : Skipper/Owner
board ship
Age : 41
Address : Sandy Point, N.S.

Name : John R. Thorburn
Position on : Crewman (son of Owner)
board ship
Age : 16
Address : Sandy Point, N.S.

Name : Donald G. Stonebridge
Position on : Crewman
board ship
Age : 21
Address : Shelburne, N.S.

Name : Gregory D. Hemeon
Position on : Crewman
board ship
Age : 24
Address: : Gunning Cove, N.S.

Name : Wade S. Nickerson
Position on : Crewman
board ship
Age : 28
Address : Shelburne, N.S.

Name : Terrence N. Buchanan
Position on : Crewman
board ship
Age : 35
Address : West Green Harbour, N.S.

Name : Daniel W. Cully
Position on : Crewman
board ship
Age : 20
Address : Sandy Point, N.S.

Narrative

The 18.84 m, 91 gross ton Canadian wooden longline fishing vessel "JOHNNY AND SISTERS II" had regularly fished on the Grand Banks off Newfoundland's south coast and areas off that Province's east coast, as well as areas off her native Nova Scotia. After a somewhat successful fishing voyage on the Grand Banks, the vessel discharged a 17,700 kg catch of mixed species fish at Louisbourg, N.S., November 17, 1989. During the next several days the vessel lay at her berth in Louisbourg while her crew took some leave. On November 21,22 her skipper/owner and a seven man crew began returning on board the vessel to prepare for another longline fishing venture on the Grand Banks. With full provisions including 8,182 litres of fuel, 909 litres of fresh water, 5,443 kg of bait and 10 tons of ice on board, the vessel departed Louisbourg before noon November 24, 1989 for a two to three-week trip.

The "JOHNNY AND SISTERS II" did not have a 'report in' schedule and details of her course to, and her arrival time on the fishing grounds, nor the area fished initially, are unknown. It is known that on the afternoon of December 1, 1989 the "JOHNNY AND SISTERS II" arrived in the same general area as the 24 m steel longline fishing vessel "7 GIRLS" was fishing. (approximate position Lat.44°30'N., Long.52°30'W.) Over the next few days the two vessels fished independently but in close proximity to each other. Several brief radiotelephone communications between the two vessels took place and during one it was learned the "JOHNNY AND SISTERS II" had previously been fishing in the St. Pierre Bank area. She was forced to move her gear from that area after a heavy swell, accompanied by strong northwest winds, developed and thus her arrival near the "7 GIRLS". The duration the vessel had fished in the St. Pierre Bank area was not disclosed.

Even though winds continued to be high in the area on December 1, seas were more conducive to the longlining operation. The "JOHNNY AND SISTERS II" on VHF Channel 6 advised the "7 GIRLS" at 1645 December 3, of her intention to move to the Banquereau Bank fishing grounds to spend two more days fishing before heading back to port in Nova Scotia as her fuel supply was becoming depleted. At the time she reported having some 18,000 kg of fish stowed in her hold. The two vessels were then in approximate position Lat. 44°23'N., Long. 52°27'W. Weather conditions reported in the area at that time were light southerly winds and moderate seas with seasonal temperatures. Earlier in the day winds had been considerably higher but had not hampered fishing operations. Southeast winds up to 50 knots were forecast for that night and thus the "JOHNNY AND SISTERS II" would have

had the wind on her stern as she transitted to Banquereau Bank.

After leaving the area there was no confirmed contact from the "JOHNNY AND SISTERS II" either with vessels at sea or with a shore-based facility. It was later reported by the skipper of the "7 GIRLS" that a severe storm struck the area for a short period on the morning of December 4, during which the "7 GIRLS" suffered minor heavy weather damage. The storm was described by those on board as the worst they had ever experienced at sea. Winds were estimated at 100 knots or more and included what was described as a water spout. Efforts by the "7 GIRLS" to make radio contact with the "JOHNNY AND SISTERS II" after the storm were unsuccessful.

On December 6, 1989, at 1600 AST, a storm warning was issued for December 7 covering the Fourchu, Banquereau, Cabot Strait, Northumberland Strait, Gulf Magdalen, Chaleur Miscou and Anticosti marine areas. Two cargo vessels, the "CAPITAINE TORRES" and "JOHANNA B", were lost with their entire crews December 7-8, 1989 in the Gulf of St. Lawrence, Cabot Strait areas as a result of that storm. A full scale search for both vessels resulted.

On December 9, the Mulgrave, Nova Scotia based clam dragger "SCOTIAN SURF", enroute to port from the fishing grounds, sighted a body in an orange suit floating in position Lat. 44°29.9'N., Long 52°36.0'W. By 1005 the body was recovered on board and at 1010 the vessel advised St. Lawrence Coast Guard Radio, St. Lawrence, Newfoundland of the recovered body which showed no life signs. The identification found with the body was that of Harry R. Thorburn.

Shortly afterwards at 1021, December 9, Search and Rescue at Halifax, Nova Scotia, received a telephone call from a Sandy Point Shelburne County, Nova Scotia resident who was concerned that the fishing vessel "JOHNNY AND SISTERS II", owned and skippered by Harry Russell Thorburn, was overdue and presumed lost during a storm.

With the report of the body recovery and additionally the overdue report, a full scale search, utilizing marine and air resources, was initiated for the "JOHNNY AND SISTERS II". The "SCOTIAN SURF" was appointed initially as on scene Co-Ordinator of Search Operations. Some 15 vessels and two aircraft became involved in the search. Over the next three days only a limited amount of debris and an overturned empty life raft, identified as being from the missing vessel, were recovered. There was no other trace found of the vessel nor of any of the other seven crewmen. On December 12, 1989 at

1800 the search was placed on reduced status and handed to the RCMP as a missing persons case.

Analysis

1. The Vessel

Based on photographs of the vessel and evidence of previous crew members the following description of the "JOHNNY AND SISTERS II" is presented. There were no stability calculations completed for this particular design, no exact sister ship was built and thus calculations for comparative purposes are not available. She was used mainly in the longline fishery. Her keel was laid at Shelburne, Nova Scotia in 1978 and as it was not intended that the vessel engage in capelin or herring fishing, section 29 of the Small Fishing Vessel Inspection Regulations made pursuant to the Canada Shipping Act relating to stability, did not apply.

All fastenings utilized in her construction were of galvanized steel. The backbone of the vessel consisted of oak with spruce planks fastened to two-ply oak steamed frames. Shelves, clamps and stringers were of spruce. The pine deck planking was supported by oak beams.

The hull was sub-divided into four compartments by three double sheathed transverse bulkheads. From forward was the accommodation/galley space then the engine-room space, the sub-divided fish hold space and aft was the lazaret.

The vessel's main deck extended flush from aft, forward to the fish hold/engine-room bulkhead at which point it was stepped down to form a well deck for approximately half the length of the engine-room space where it then stepped up to form the wheel-house deck. The after wheel-house partition was also located at that point. At the engine-room/accommodation space bulkhead the wheel-house deck stepped up to the forward deck, the aftermost portion of which was utilized as the wheel-house instrument dash support.

The original superstructure consisting of the wheel-house/slaughter-house was constructed of marine plywood on spruce framing, and was situated one-third of the vessel's length from forward extending aft to the fish-hold hatch.

Scuppers were fitted on both sides forward and aft in

the well deck, while freeing ports were located at intervals between bulwark stanchions along the main deck port and starboard.

Access to the accommodation space was down through a companionway located at the forward port side of the wheel-house and to the engine-room through a flush deck hatch located amidships aft in that space.

The main Cummins diesel engine was fitted to fabricated steel engine beds bolted to wooden floors with a 4,000 litre capacity tank fitted on each side of the engine.

The vessel's fish hold was sub-divided into 12 fish pounds by portable aluminum penboards supported in aluminum stanchions. Her normal average catch ranged between 18,000 to 27,000 kg but she was known to land as much as 63,000 kg on occasion. With those maximum loads her freeboard was minimal as evidenced by photographs taken during the summer of 1988 while alongside a wharf at a Newfoundland port loaded with 63,504 kg of fish. (See photographs).

The vessel was last on dock at Shelburne, Nova Scotia in March 1989 when annual routine maintenance was performed. At that time several topside planks were replaced, due to normal wear, and general caulking, painting and mechanical problems attended to.

The lifesaving and fire extinguishing equipment reportedly carried on board met the requirements of the Small Fishing Vessel Inspection Regulations made pursuant to the Canada Shipping Act.

The "JOHNNY AND SISTERS II" underwent a quadrennial survey at Shelburne on May 2, 1986, at which time her SIC 29 was renewed to expire May 1, 1990. The vessel was classed Home Trade 2, East Coast of Canada, which permitted operation to 120 miles offshore and not more than 200 miles between ports of refuge, however the vessel's last known position was about 140 miles offshore.

As part of the maintenance schedule adopted by her owner, the vessel was hauled out at Shelburne, Nova Scotia regularly each year.

Although not required by regulation, the vessel was voluntarily equipped with three radiotelephone sets, appropriately licenced under the Radio Act. The skipper held a Radiotelephone Operator's Restricted Certificate

(Maritime), which is required by the Radio Act and General Radio Regulations to operate such equipment.

2. Environmental Conditions

The "JOHNNY AND SISTERS II" was in all probability either transitting from the southern portion of the Grand Banks to the Banquereau Bank or was on the Banquereau Bank at the time of the casualty. The exact date, time or position is not known. For the entire period of December 1 to December 11, gale warnings were in effect.

The following is a summary of actual and forecast weather for the period December 1-9, at position Lat. 44°29'N., Long. 52°33'W., the general area in which the body was recovered on December 9, 1989. The vessel's approximate last known position (LKP) on December 3 was Lat. 44°23'N., Long. 52°27'W. The information was presented by the Newfoundland Weather Centre, Gander, Newfoundland, a division of the Atmospheric Environment Service of Environment Canada and was interpreted from analyzed surface charts, any ship observations together with weather buoy reports in the area (See also Annex I).

Friday, December 1:

A ridge of high pressure over the southern Grand Banks moved eastward out of the area in the morning. A low followed the ridge through the area. By 1200Z winds increased to easterly 15 knots and to easterly 35 by 1800Z. Overnight winds diminished to northerly 15 to 25. Air temperature 5°C; sea temperature 11°C; sea state near 5 metres.

Saturday, December 2:

In the wake of the low from Friday winds backed from north to northwest but remained near 25. Air temperature 5°C lowering to 0°C in the evening; sea temperature 11°C; sea state near 5 metres.

Sunday, December 3:

A ridge of high pressure from the west caused winds to diminish to light. However, winds increased in the evening to southeast 25 as a low moved towards

Nova Scotia. Air temperature 0°C rising to 6°C in the evening; sea temperature 11°C; sea state near 4 metres.

Monday, December 4:

A secondary weather system formed over Cape Breton Island and moved over eastern Newfoundland. Two frontal systems crossed the area in a short while. Southeast gales 35 to 40 were reported in the morning then shifted to northwesterly winds 15. By late afternoon winds were southwest 15, and were briefly southeast 15 before returning to southwest 15 to 20 in the evening. Air temperature 12°C falling to 8°C in the afternoon; sea temperature 11°C; sea state near 7 metres.

Tuesday, December 5;

A moderate southwesterly flow persisted over the area for the most part. However, a weak low moved just to the south of the area and caused some fluctuations in the wind direction. During the day winds went southwest 15 to northeast 15 by mid morning and to southeast 20 in the afternoon. By evening winds were westerly 15. Air temperature 5°C to 7°C; sea temperature 10°C; sea state near 7 metres.

Wednesday, December 6:

Similar to Tuesday weather in that weak systems moved through the area. Winds started as northeast 15 then shifted to southwest 15 by mid morning. In the afternoon winds became northwest 15 then shifted to southwest 15 in the evening. Air temperature 7°C lowering to 5°C in the evening; sea temperature near 10°C; sea state near 5 metres lowering to 3 in the evening.

Thursday, December 7:

An intensifying low moved from Central Nova Scotia in the morning to just west of Daniels's Harbour by evening. Winds became southeast 15 to 20 in the afternoon and southeast 20 to 30 in the

evening. After midnight winds were southwest 25. Air temperature 4°C rising to 10 in the evening; sea temperature 9°C to 10°C; sea state 3 metres rising to 5 in the evening.

Friday, December 8:

The low continued northeastward to the Belle Isle Bank. A northwest gradient settled over the area. Winds began as northwest 30 to gales 40 and increased in the afternoon to west or northwest gales 40 to 50. Air temperature fell to -1°C by afternoon; sea temperature 9°C; sea state 9 to 10 metres.

Saturday, December 9:

The deep low remained over the Belle Isle Bank. West to northwest gales 40 to 50 persisted. Air temperature -3°C; sea temperature 7°C; sea state near 11 metres.

NOTES:

(1) Buoy (G138) appeared to be malfunctioning when the air temperature reached -2°C coupled with gale to storm-force winds. This may have been caused by icing from freezing spray as the anemometer is only 5 m ASL (above sea level) with the temperature sensors at a lower level.

(2) Vessel icing due to freezing spray was only possible from the eighth through the tenth with air temperatures -2°C to -3°C and winds of 40 to 50 knots. The nomogram in use at the Newfoundland Weather Centre suggested moderate intensity. For the other days air temperatures were 0°C or warmer, hence no icing.

Evidence presented by the master of a fishing vessel in the same general area the "JOHNNY AND SISTERS II" was last seen related the following weather information for the night of December 3 and morning of December 4, 1989:

Winds diminished in the evening and picked up early on the morning of December 4

accompanied by lightning, heavy rain and what was described as a water spout.

The water spout struck his vessel about 0930 and heeled her over on her beam ends and turned her around in circles several times. The system lasted for a period of up to about ten minutes during which time winds were estimated at about 100 knots before moving on. Another vessel about 25 miles to the southeast reported the same phenomenon passing close by her position about 45 minutes later while other vessels to the north and south did not experience any similar condition. After the system passed, his efforts to contact the "JOHNNY AND SISTERS II" were negative. Several of his vessel's antennae sustained damage during the 10 minute period in which the phenomenon was encountered. It is not known if antenna damage was a factor in his ability to contact "JOHNNY AND SISTERS II".

An Environment Canada analysis of the storm of December 3-4 (Annex 1) explains that the system contained very moist unstable air. Given these meteorological conditions, the analysis concludes that lightning, severe squalls and the possibility of the phenomenon of water spouts were associated with the system.

Waterspouts which occur over bodies of water are essentially the same as tornadoes which occur over land. Waterspouts are seldom as intense or as extensive. They are rarely more than 200 m wide at sea level move fairly slowly and like tornadoes have an average life span of about 8 minutes. Several may be observed at the same time in the same area. The spout rotates rapidly and the wind around it follows a circular path. Although very local, this wind is often violent and leads to confused seas.

For these reasons waterspouts are difficult to detect and even more difficult to predict since the observing network is so sparse and there is no local weather radar.

The storm of December 3-4 affecting the Grand Banks was forecast to intensify well before the onset of the storm force winds and storm warnings (force 10) which gave about 24 hours advance notice of those conditions. Sea state forecasts were somewhat slow in reflecting the speed with which the seas built.

Although it is uncertain as to the time, date and

position of the casualty the evidence would indicate it most probably occurred early on the morning of December 4, 1989 some 70 miles to the west of the LKP of the "JOHNNY AND SISTERS II".

3. Reporting System

The "JOHNNY AND SISTERS II", like many of the independently owned smaller fishing vessels, did not practice a regular reporting schedule to her company office at Shelburne other than to notify a shorehand, usually 24 hours in advance, of her intended arrival at a designated port in order that a truck would be waiting to transport her catch. Although, when in the vicinity of other fishing vessels, it was customary to communicate on VHF channel 6 for purposes of general interest, such communications were kept to a minimum and at such times it was not a practice to divulge any pertinent information relevant to her catch.

Fishing vessels equal to or in excess of 19.8 m in length are required under Section 61 of the Fisheries Act to report (HAIL) daily to a Fishery Officer, a true return of their catch. Fishing vessels between 10.6 m and 19.7 m need only to provide Fisheries and Oceans, Statistical Branch a report of the type and amount of fish landed on completion of a voyage. There is no other regulation in place to require a fishing vessel to report her position on a regular schedule.

Following a number of investigations into the disappearance of fishing vessels, recommendations have been made that a daily reporting scheme be instituted by fishing vessels but for non-company vessels such a policy is rare.

The "JOHNNY AND SISTERS II" had not been expected back in port at Louisbourg until sometime about December 10 or even later.

When storm conditions were forecast on December 6, a concerned family member requested a radiotelephone check on the vessel through a Lockport fishing company with a fleet of large fishing vessels on the Grand Banks. It was learned the "JOHNNY AND SISTERS II" had last been seen on December 3 at which time all was well. Nothing further was heard from the vessel.

With the reported losses of the cargo vessels "CAPITAINE TORRES" and "JOHANNA B" December 7-8 and the media coverage given, concern mounted for the "JOHNNY AND

SISTERS II" such that at 1021 on the morning of December 9 the vessel was reported as overdue and presumed lost to the Search & Rescue section of the Canadian Coast Guard at Halifax. Search and Rescue had shortly before, at 1010, been advised of the recovery of a body on which were the identification papers of the skipper/owner of the "JOHNNY AND SISTERS II". Consequently a full scale search was formulated and put into action.

4. Position Reporting

The Manual of Safety and Health for Fishermen published by the Canadian Coast Guard is based on the International Maritime Organization (IMO), Code of Safety for Fishermen and Fishing Vessels, Part 'A' and in the manual, under Chapter 2 titled 'Navigation' the following is extracted under the heading 'Position Reporting':

Whenever possible reports should be sent to an appropriate Coast Guard Radio Station at not more than 24 hour intervals, so that in the event of any mishap, the last known position of the vessel can be fixed with reasonable accuracy.

In cases where vessels do not have radio facilities or in cases of radio failure, the skipper should, whenever possible, pass his position to a nearby vessel with radio facilities so that the report may be forwarded as in above.

In all cases the skipper should inform the harbour master or other responsible person of their departure from port, the proposed area of fishing and the approximate duration of the voyage. They should notify the same person of their return to port.

Those are recommendations only and designed to assist fisherman in case of mishap. Some 5½ days had elapsed between the last known communication with the "JOHNNY AND SISTERS II" and recovery of the body.

5. Body Recovery and Identification

The clam fishing dragger "SCOTIAN SURF" had been fishing on the Tail of the Bank and was enroute to her discharge port at Mulgrave, Nova Scotia. At 0845 on the morning

of December 9, 1989 in approximate position Lat. 44°29'N., Long 52°36'W while steaming on a course of 281° Gyro, an orange object was sighted floating in the sea ahead of the vessel. As the vessel neared the object it was identified to be a body in an orange marine abandonment immersion suit. By 1005 the body was recovered on board. The suit, a CCG approved model, was zipped across the chest. To facilitate recovery on board, several holes were cut in the feet to drain water from it. The body was that of a white male and no life signs were evident. Except for undershorts no other clothing was worn in the suit. Found in the suit were a wallet, a ring box containing a lady's ring and a wrist watch. Identification contained in the wallet was that of Harry Russell Thorburn, Shelburne, Nova Scotia and thus when reported to the Coast Guard Radio Station at St. Lawrence, Newfoundland, that name was given.

At about the same time, the fishing vessel owned and operated by Harry R. Thorburn, "JOHNNY AND SISTERS II", had been reported to the Halifax, Nova Scotia, Search and Rescue as overdue and missing.

Although identification stated Harry Russell Thorburn, the description of the body given caused doubt to those who knew him. Apparently all fingers of both hands were intact on the body while Mr. Thorburn had tips of two fingers missing.

The fishing vessel "7 GIRLS", aware of the communications in that regard, requested a full description of the body as two former crew members of the "JOHNNY AND SISTERS II" were on board the "7 GIRLS". When the description of a tattoo on the body was given both former crew members recognized it and consequently the body was then identified as being most probably a crew member of the "JOHNNY AND SISTERS II", Paul Boutet, and not Harry R. Thorburn.

At Mulgrave, the "SCOTIAN SURF" was met by an RCMP constable accompanied by a family member of Paul Boutet. A positive identification of the body was made at that time as being Paul Boutet, age 25. Mr. Boutet had been designated by the owner to act on his behalf when necessary and thus had reason to carry the owner's wallet and I.D. on occasion. The body was examined by a physician at Port Hawkesbury. An autopsy had not been ordered nor was one performed. The attending physician put the cause of death as drowning. There were no physical injuries evident, other than some superficial abrasions about the facial area, the only area exposed

from the immersion suit. Body condition was consistent with having been immersed in water for a considerable period of time. There was no indication given as to time of death.

The owner, Harry R. Thorburn, had also been aboard the vessel but has not been recovered.

6. Search and Rescue

The fishing vessel "JOHNNY AND SISTERS II" had been fishing on the Grand Banks. The last reported contact with the vessel was at 1845 December 3, at which time she reported having approximately 18,000 kg of fish on board and was in approximate position Lat. 44°23'N., Long. 52°27'W.

Prior to the recovery of the body December 9 there had been no indication that the "JOHNNY AND SISTERS II" had met with disaster. At 1010 St. Lawrence Coast Guard Radio received a VHF radiotelephone message from the "SCOTIAN SURF" that a body had been recovered. At about the same time the Rescue Coordination Centre (RCC) at Halifax received an overdue report on the "JOHNNY AND SISTERS II". A full scale search was initiated for the missing vessel and remaining seven crew members. The actual time or position of the casualty is unknown.

Initially it was thought that the "JOHNNY AND SISTERS II" may have met with disaster in the same storm system which resulted in the loss of two cargo vessels and their entire crews in the Gulf of St. Lawrence and Cabot Strait, December 7-8, 1989. Evidence since has led to an earlier casualty date which could have been most probably during a storm system of December 3-4, 1989 as outlined in Analysis 2.

After the initial report of the body recovery at 1010 and overdue report at 1021 December 9, a "Mayday Broadcast" was issued by RCC. An Aurora aircraft was diverted from the Cabot Strait case (M/V "CAPITAINE TORRES") as well as on scene fishing vessels, the CCGS "JACKMAN" and "ALERT". The HMCS "CORMORANT", a naval vessel aiding in fisheries patrol duties, was also tasked.

The incident was in the United States Coast Guard's New York Search and Rescue (SAR) Region and after discussion it was concurred that the Marine Rescue Sub Centre (MRSC) St. John's, Newfoundland, assume responsibility as SAR Mission Co-ordinator (SMC).

MRSC immediately doubled up Controllers and a Drift Plot based upon the position of the body recovery was calculated for people in the water and for liferaft drift. CASP plots were also requested from RCC New York.

Marine and Air Resources were co-ordinated by MRSC St. John's and Halifax RCC, respectively. RCC New York was kept fully informed and assisted in any way possible.

Response to the Mayday Broadcast and initial tasking resulted in numerous resources assisting in the search operations. The F/V "SCOTIAN SURF" was appointed Co-ordinator Surface Search (CSS) until arrival of the HMCS "CORMORANT" and the "CORMORANT" would be relieved on the arrival of the CCGS "ANN HARVEY". The CCGS "JACKMAN", enroute for the search area from Placentia Bay, Newfoundland, was released from the incident and tasked to proceed and standby a bulk carrier which was experiencing heavy weather damage and severe icing south of St. Pierre.

The Surface and Air search continued until placed on reduced status at 1800 December 12, 1989. Several items of debris were sighted during the search some of which were recovered and positively identified as being from the "JOHNNY AND SISTERS II". On December 12 in position Lat. 43°57'N., Long. 49°25.2'W an overturned empty life raft was recovered on board the HMCS "CORMORANT". The raft was identified by serial number as belonging to the "JOHNNY AND SISTERS II". A full account of the raft itself is contained in Analysis 11.

In all, during the search, a total of 15 surface vessels and 11 aircraft were involved covering a total area of 39,890 sq./mi. Due to the extensive area coverage and exhausted survival time, the search was placed on a reduced status at 1800 December 12, 1989 and handed to the RCMP as a Missing Persons Case. Throughout the entire search period weather conditions were severe and hampered search operations.

A major factor which also hampered SAR operations was that the exact time and position of the casualty was unknown.

It should be noted that some of the numerous resources assisting in the search operations were diverted only to transit the search area while keeping a sharp lookout. Those vessels reported negative results.

Although the search was placed on reduced status December 12, 1989, in accordance with standard operating directives, Canadian Maritime aircraft and ships normally report any unusual sightings. In this instance resources were specifically advised to investigate, on an opportunity basis, the last known positions of the three casualty vessels "CAPITAINE TORRES", "JOHANNA B" and "JOHNNY AND SISTERS II". Results were negative. The incident was co-ordinated in a professional and efficient manner. The splitting of air and marine SMC duties is not standard procedure and was done in this case because of RCC involvement in other cases with air resources and the proximity of the surface search to MRSC(N). Search effectiveness was not compromised and through good communications were probably even more efficient.

A resume of the search operation is attached as Annex 2.

7. Debris

During the air and sea search several items of debris were sighted, some of which was recovered. A list of those items is contained in Annex 2. There was no single item recovered which would indicate the main hull structure had been damaged. None was of sufficient size as to give any indication of the disaster with which the vessel met. The liferaft recovered on December 12 is dealt with separately in Analysis 10, 11. An 'ice chest' door was recovered and positively identified (see photographs). It was part of a stained and varnished plywood compartment located in the accommodation/galley space. The compartment was insulated with styrofoam and utilized for storage of perishable food supplies. Examination of the door revealed many surface scratches and dents which may have resulted when it was torn free of its hinges by the hydraulic action imposed when the vessel became partly submerged, and by the door floating freely about the space until clearing the vessel.

Its condition would indicate it may have been floating in the space for a period of time with the vessel submerged to some degree. Thus sudden total sinking of the vessel may not have occurred immediately after the vessel was overwhelmed. Of the other debris examined there was no evidence which could indicate what, in fact, did happen to the "JOHNNY AND SISTERS II".

8. Other Vessels in the Area

Several other fishing vessels were in the same general

area on December 3 - 4. The steel 28 m fishing vessel "7 GIRLS" reported that on December 3 she was hove to with her stabilizers set when winds increased from about nil in the afternoon to S.E. 70-80 knots with snow, rain and lightning after midnight. Seas were reaching 12 to 18 m and about 0930 December 4 what appeared to be a turning wall or funnel of water being picked up about 18-20 m high caused the vessel to just start turning like a 'spinning top' for a short period. Her slaughter-house took a wave and filled after a 1.9 cm fiberglass sheathed plywood door was smashed to pieces. Some of the vessel's radio aerials on the superstructure were pulled out of their sockets. The vessel went over on her beam ends at one point but successfully righted herself. Winds had come about suddenly to the northwest and blew at about 100 knots for a short time and the whole system passed in about 5 to 10 minutes.

Those on board explained experiencing a feeling of being pulled to the deck by some unknown pressure and at the same time a sensation similar to being in a car and going over a rise and dropping suddenly.

Another vessel, the "ATLANTIC HORIZON", about 25 miles to the southeast reported reasonable weather at that time but within an hour she, too, experienced the same phenomenon but not as extensively. Other vessels to the north and south did not experience the same system, reporting only high winds and heavy seas.

9. Lifesaving Equipment and Fire Fighting Appliances

The "JOHNNY AND SISTERS II" departed Louisbourg, November 24 with the following equipment reportedly on board:

- 2 - six-person Dunlop inflatable liferafts recertified 1989
- 1 - lifebuoy with line
- 1 - lifebuoy with automatic light
- 8 - approved keyhole life jackets
- 1 - immersion suit belonging to a former crewman
- 12- flares "C" type
- 6 - rockets "A" type
- 2 - fire-axes
- 4 - fire buckets
- 4 - 5 kg D.C. fire extinguishers
- 1 - 19.8 kg Halon smothering system in the engine-room space

The equipment met the requirements of the Small Fishing

Vessel Inspection Regulations and the Lifesaving Equipment Regulations.

The 'Regulations Respecting Emergency Position Indicating Radio Beacons' do not apply to a ship that is less than 20 m in length, thus the "JOHNNY AND SISTERS II", being 18.84 m in length, was not required to be so fitted. These regulations were introduced in November 1989. At that time the Canadian Coast Guard undertook to review the length of vessel criteria, with a view to its reduction, after twelve months of operating experience. An EPIRB was carried on board; however, it had not been serviced, was not in working order, and was stowed in a seat locker in the wheel-house. It had been placed on board after being removed from another vessel purchased by Mr. Thorburn. In the interest of safety, had it been maintained and properly located to enable it to float free, its transmission may have alerted SAR authorities when the vessel was initially in distress.

A single immersion suit was carried on board. There is no existing regulation requiring they be carried on board vessels of the size and class of the "JOHNNY AND SISTERS II". Not knowing the circumstances surrounding the loss of the vessel, it would be purely speculative to say that such suits may have saved the lives of the crew. The lone suit carried was utilized by one crewman, the only one recovered. There exists the possibility that had all been wearing such suits the probability of survival would have increased, especially had they remained together. In such instance, grouped together, they would have presented a greater target for sighting and could possibly have effected some sort of signal to any nearby vessel. However, given the probable time frame of 5 1/2 days it is very doubtful anyone could have survived during the environmental conditions experienced.

The proposed Small Fishing Vessel Safety Regulations, currently under discussion with industry, include a section headed 'Lifesaving Equipment' which will require a vessel of this type to carry, amongst other items:

- a) one lifejacket for each person on board the vessel;
- b) one thermal work suit for each person on board the vessel, but if a thermal work suit meets the performance standards of a lifejacket, the lifejacket need not be carried;

(a thermal work suit means a marine anti-exposure work suit system that is manufactured in accordance with the Canadian General Standard Board, Standard CAN/CGSB-65.21-M.)

A thermal work suit is not intended to perform the same functions as an immersion suit.

10. Liferaft

The "JOHNNY AND SISTERS II" was fitted with two 6-man Dunlop Seafarer MKIII inflatable liferafts both of which were serviced at an authorized service depot at Dartmouth, Nova Scotia, March 16, 1989, and issued Re-inspection Certificates.

One liferaft, Serial No.32346, manufactured in September 1977, has not been recovered and is presumed to have gone down with the vessel. The other liferaft, Serial No.38339, manufactured in March 1985, was recovered on board the HMCS "CORMORANT" 10 minutes after it had been sighted at 1035 on December 12, 1989, some 110 km east of the body recovery position.

When a liferaft undergoes annual servicing, it is opened up from its container, rolled out and inflated. The liferaft then undergoes a manometer test. All valves are checked for operation and reseating. The provision pack is checked and any items found to have deteriorated, or to be near their expiry date, are replaced. The CO2 cylinder, after examination, is weighed/recharged and then the entire unit is repacked according to requirements.

The superintendent of the Equipment and Operational Safety Branch of the Canadian Coast Guard, Ottawa, issued a directive on March 13, 1987, regarding specific tests to be carried out respecting liferafts of over 10 years of age. These tests had to be conducted in the presence of a marine surveyor. In addition to inflation by its gas cylinder and an overpressure test of 7 kpa, while checking seams and fabric, five other procedures are carried out. Although the liferaft was only 4½ years old, it was subjected to these extra tests, as was her other liferaft (not recovered), and no defects found.

11. Retrieval and Initial Examination of Liferaft

The overturned liferaft was sighted at 1025 December 12, 1989, in position 45°56.9'N., 49°25.3'W., by the HMCS "CORMORANT" and 10 minutes later had been taken on

board. The liferaft was not rigidly inflated at the time due mainly to the length of time adrift in the cold sea/air temperature. It appeared not to have been occupied as the hood remained fastened inside. Weather conditions at the time were somewhat severe and the life-raft was secured inside the vessel while the search continued. After a few hours in the warmer temperature the liferaft became more rigid. It was later deflated.

The liferaft's serial number 6D3/38399 was communicated to RCC and subsequently identified as being from the "JOHNNY AND SISTERS II". The HMCS "CORMORANT", while at St. John's, Newfoundland, on December 14, 1989, had the liferaft reinflated and examined, at which time photographs were taken. The Class "A" survival pack, one set of paddles, one floating knife, spare sea drogue and about 3 m of painter line were missing. The liferaft appeared to be in good condition. After deflation, it remained on board the HMCS "CORMORANT" and was transported to Halifax, Nova Scotia, where it was placed with the DND Liferaft Shop for further examination and testing.

On January 11, 1990, the liferaft was inspected by personnel of the DND Liferaft Shop with a Marine Casualty officer in attendance. It had been inflated the previous day at the shop and during inspection was found to be still fully inflated and quite sound. The general condition of the liferaft was good.

An independent study was completed by the Department of National Defence at Maritime Command Headquarters, Halifax, in an effort to obtain any evidence to aid in determining if the liferaft might have been boarded by any of the crewmembers of the "JOHNNY AND SISTERS II". The study was conducted at the DND Liferaft Shop of the Ship Repair Unit, Atlantic, CFB Halifax, on January 29, 30, 31, 1990, and a precis of the findings follows. (Supplementary information is contained in Annex 3).

The general condition of the inflation equipment salvaged was found to be good and there was no sign of fabric deterioration in the material of the liferaft.

The liferaft had not been patched nor had any repairs been carried out.

The liferaft's CO2 cylinder was hydrostatically tested and recharged and fitted to the deflated raft. When triggered,

the liferaft inflated fully in 7 seconds and all chambers held the required pressures. All relief valves operated as per specification. The only item which was not as per specification was the painter line. It had been renewed in March when the life raft was serviced and was not colour coded. However, this had no bearing on the casualty.

The missing equipment could be attributed to the severe weather conditions at the time and the length of time the raft may have been adrift; from a minimum of 3 to a maximum of 9 days. It is not uncommon for "A" packs to break loose in heavy weather.

How the liferaft was, in fact, released from the vessel is unknown, but the position of the doubler patch from the container on the painter, and the position of the break in the painter, indicates that the liferaft was automatically inflated as the painter was pulled free when the container floated clear of the vessel. The break in the painter appeared to be the result of chafing.

From the evidence, it appears that the liferaft of the "JOHNNY AND SISTERS II" met the Standards for Inflatable Liferafts (1974) with the exception of the colour coded painter line.

It was reported that the liferafts of the "JOHNNY AND SISTERS II" were not equipped with hydrostatic releases, the purpose of which is to automatically release the liferafts to assist survivors in the water should the vessel become submerged. There is, at present, no regulatory requirement that a vessel of the size and class of the "JOHNNY AND SISTERS II" be so fitted. Further, in the past, fishermen have expressed concern that a liferaft so fitted may be inadvertently released by seas shipped aboard the vessel in heavy weather and, thereby, lost to those on board.

From the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, a general requirement states that:

A liferaft shall be so constructed that, when fully inflated and floating with the cover uppermost, it shall be stable in a seaway.

A similar regulation is stated in the SOLAS Convention.

Special investigations were conducted on the stability of a liferaft in a seaway in the Soviet Union 1985-1987 at which time it was confirmed there was a high degree of safety for the 6 and 10-person liferafts in usual seas but when high waves with breaking crests were introduced, capsizing of the liferaft becomes inevitable.

The same research revealed that the safety of liferafts may be significantly improved mainly by some alterations to the sea anchors and the fastening of the same to the liferaft. Further research by the Icelandic Coast Guard has led to the development of a more effective sea anchor for inflatable liferafts. A Canadian Coast Guard representative was present during sea trials in the North Atlantic in March 1990. The results of these trials are currently under study in Canada with a view to introducing this improved device. No such improvement had been implemented in the subject liferaft, nor at present is there a requirement to do so.

Without evidence to the contrary, it appears that the liferaft had not been inhabited by any of the crew from the "JOHNNY AND SISTERS II".

12. Possible Causes of Casualty

There is not one single scenario to present, and without evidence or testimony from a survivor or witness, it is impossible to indicate the exact cause of this tragedy.

The precise time or location of the distress is unknown and initially it was believed the vessel met with disaster during adverse weather conditions in the same storm system that resulted in the loss of two cargo vessels and their entire crews in the Gulf of St. Lawrence and Cabot Strait December 7-8, 1989. The position of the body recovery on December 9, 1989 is known. Based on that a Computer Assisted Nautical Search and Rescue Plan (CANSARP) Drift Plot and Computer Assisted Search Planning (CASP) was calculated for people in the water and liferaft drift.

All debris was sighted or recovered within the CANSARP, CASP search areas and the liferaft recovered within 21 km of the CANSARP datum position. Evidence placed the "JOHNNY AND SISTERS II" in the general area of Latitude 44°23'N., Longitude 52°27'W on the evening of December 3, 1989 and at 1845 she reported she was transitting

from that area to the Banquereau Bank fishing grounds.

Vessels of her size employed offshore in exposed waters are operated at some risk and any insignificant or minor deficiency under normal operations may not be apparent but can in extreme conditions initiate a sequence of events culminating in disaster.

The experience of her skipper/owner and several of his crew, including three of whom reportedly survived previous other vessel losses at sea, indicates normal emergencies could be coped with in a professional and efficient manner. From the fact that no distress message was received, no flares or rockets were seen and only one of two liferafts recovered, it may be presumed the vessel was overwhelmed suddenly.

Consideration has been given to the following possibilities:

Fire/Explosion

Had fire/explosion been a cause the likelihood is that some burned/charred or smoke covered debris would have been found. None of the debris sighted or recovered gave any indication of fire/explosion having taken place.

Superstructure Icing

Although temperatures were low throughout the period December 3-8 other fishing vessels in the area did not experience icing until about December 11-12 and then only of a minor nature, thus icing of the superstructure is not thought to have been a factor in this casualty.

Collision/Grounding

Grounding would not have been possible in the area in which the vessel was known to be operating and thus can be ruled out. Collision is a possibility, but no other vessel reported being involved in or observing such an occurrence. The wreckage sighted or recovered indicates the hull remained intact other than for the superstructure and interior items free to float clear; there was no debris of the type expected to be found after major collision damage.

Flooding of the Vessel

An ingress from below the waterline to any or all of the

vessel's compartments cannot be overlooked as a possible cause of the vessel's disappearance. However, taking into consideration the vessel's trouble free operating history, the regular and proper maintenance schedule and the fact that had flooding occurred, then in all probability the crew would have been afforded time to either make a distress call, utilize flares/rockets or to launch one or both liferafts and abandon the vessel. Thus it is doubtful that flooding in itself was a contributing factor.

Over loading

Based on evidence obtained, the "JOHNNY AND SISTERS II" had landed maximum single trip catches of 63,500 kg on occasions, while her normal landings per trip ranged from 18,000 to 27,000 kg. In her last communications with the "7 GIRLS" December 3, 1989, she indicated having about 18,000 kg stowed in her fish hold. That, together with reports that she visually showed plenty of freeboard during the two days prior to passing astern of the "7 GIRLS" heading for Banquereau Bank, would place considerable doubt on overloading as a major contributing factor.

Capsize

Establishing the stability characteristics of any vessel is dependent on the existence and availability of certain basic design, hull form and loading data. Even when this original data is available, the vessel's stability cannot be determined without details of her lightship weight and centre of gravity which would generally have been determined from an inclining experiment, rolling period test or estimated from a sistership or group of similar vessels. The "JOHNNY AND SISTERS II" was never subjected to either the inclining experiment or the rolling period test and with no exact sister ship or group of similar vessels available her stability characteristics are unavailable. Lack of any or all of the required information is not indicative of a vessels stability characteristics.

Capsize, due solely to insufficient inherent stability characteristics, is doubtful based on the evidence of the vessel's successful 10-year operating history, together with testimony of former crew members and relatives who had served on board. The vessel weathered several previous severe storms including a March 1988 system during which the 19 m fishing vessel "BONNIE LOU II" and her crew of five were lost. Thus it could be

said the vessel possessed good basic stability characteristics.

Evidence of sighted and recovered debris confirms the occurrence of superstructure damage, but it cannot be determined whether or not that damage occurred before, as, or after the "JOHNNY AND SISTERS II" met with disaster.

Previous investigation of sudden capsizes indicates it is probable that a vessel would go down intact. On the other hand had the vessel been struck by a large wave or the water spout, of December 4, severely damaging the superstructure and swamping the vessel, it is conceivable the seven missing crew were swept overboard while Mr. Boutet was alone in the forecabin. Had that hypothesis actually occurred, there is no way of knowing how long the vessel remained submerged at the surface before sinking; nor is it possible to say for sure that the vessel did in fact capsize.

The recovered body was wearing only undershorts in the immersion suit which indicates firstly that Mr. Boutet was most likely in his bunk, asleep, at the onset and secondly that he was not afforded or did not feel he had sufficient time to fully dress in warm clothing prior to donning the suit. Also when recovered the suit contained a considerable amount of water which may have accessed during donning while awash. Being the person designated to carry on business transactions on behalf of the owner, could account for the identification of Harry R. Thorburn contained in the suit and the ring and watch would probably have been near at hand as well.

Sometime about 0700-0800 on the morning of December 4, 1989 the master of a 25.6 m wood fishing vessel reported having heard the lone word 'WHAT' while monitoring the VHF Channel 6 frequency. His vessel had been fishing near the "JOHNNY AND SISTERS II" the previous afternoon but left the area to seek shelter from the forecasted storm. At the time of hearing the lone word his vessel was in the Placentia Bay area of Newfoundland.

No other vessel in the area reported hearing that transmission and channel 6 VHF is the channel used by fishing vessels as their communication channel. There had been no report of any distress on either of the international distress calling frequencies, VHF Channel 16 or MF Channel 2182.

Although only the one word, which sounded as an

exclamation 'WHAT' was heard it was believed to be the voice of Harry Thorburn, skipper of the "JOHNNY AND SISTERS II".

It would be difficult, based on the single word, to determine positively the identity of the speaker, however, if it is accepted that it was Mr. Thorburn, it would indicate the "JOHNNY AND SISTERS II" was probably still afloat up to that time, about 0700-0800 December 4, 1989.

It could be said then that the vessel would have had some 10 hours or so steaming time available after her last communication at 1845, December 3. At an average speed of 7-8 knots in a following sea she could have travelled about 70-80 miles to the west of the "7 GIRLS" by 0700-0800 the next morning.

From the evidence that 45 minutes or so after passing the "7 GIRLS" the water spout(s) reached the area of another vessel which was 25 miles to the southeast of the "7 GIRLS" it could be calculated the meteorological system generating the spout(s) was moving at the rate of about 30 knots. It is conceivable then that, having struck the "7 GIRLS" at 0930, the spout(s) could have been some 60-70 miles to the west of that vessel between 0700-0730. That would have placed the spout(s) in the immediate area of the "JOHNNY AND SISTERS II" at about the time the lone word 'WHAT' was heard by the "FLYING DART" and could perhaps account for the inflexion of exclamation on that single word, had it been spoken by Mr. Thorburn. The casualty to the "JOHNNY AND SISTERS II" may have occurred at that time.

Further, had the "JOHNNY AND SISTERS II" followed closely her intended plan, as communicated to the "7 GIRLS", to fish the Banquereau Bank area for a further two days, then she should, in all probability, have been underway back to port by or on December 6. Also, had the normal practice of notifying the vessel's shorehand 24 hours in advance of landing been followed, then such communication would have been made on December 6 or at the latest December 7. No such communication was received. Having also advised the "7 GIRLS" that her fuel was becoming depleted would indicate that a longer stay on the grounds would have been impossible. The forecast storm for December 7 did not affect the areas of the Cabot Strait until late in the day. Evidence gathered, although not conclusive, favours the theory of the vessel becoming overwhelmed suddenly during adverse weather on the morning of December 4, 1989.

13. Cold Water Survival

A Canadian Red Cross Society Pamphlet entitled 'Cold Water Survival' graphically illustrates the predicted survival time for average adults, holding still in ocean water, wearing a standard life jacket and light clothing, is about 2 1/2 to 3 hours in water of 10°C. (see Annex 4) During the period December 3 through December 9 (date vessel last seen and date the lone body was recovered) the seawater temperature averaged 10°C.

The major contributing cause of death for persons immersed in the frigid water off Newfoundland and Labrador is hypothermia (loss of body heat). In cold water, the skin and peripheral tissues cool very quickly; however, it takes 10 to 15 minutes before the temperature of the heart, brain and other internal organs begins to drop. Once cooling begins, the body temperature falls steadily and unconsciousness can occur when the core temperature drops from the normal 37°C. Cardiac arrest is the usual cause of death when the core temperature cools to below 30°C.

In the case of the seven missing crew members of the "JOHNNY AND SISTERS II" it is not certain what clothing was worn, and whether or not any had the opportunity to don a lifejacket. Furthermore, it is not known if there were any injuries sustained. As such their survival time may have been substantially limited. All members of the crew, with the exception of the skipper and crew member, Nickerson, were swimmers.

In the case of the recovered Mr. Boutet there was no indication of exactly how long he may have been in the water prior to being found. No autopsy was ordered or performed. At the time of recovery, the immersion suit was zipped but it contained a considerable amount of water which possibly may have gained access at the time of donning. The body condition indicated being immersed in water for a considerable period of time.

14. Previous Casualties

The only previous casualties reported by the "JOHNNY AND SISTERS II", according to MCI records going back to and including 1975, are:

July 1979. An electrical short circuit occurred in the engine-room causing a fire which was extinguished by her crew. The vessel became disabled and had to be towed to port for repairs,

the major portion of which consisted of rewiring. At the time, the vessel was 248 miles from land and thus outside the limits of her Home Trade II Class Certificate.

March 1988. An engine failure necessitated a tow and during the tow, the towing vessel slowed down. The "JOHNNY AND SISTERS II" passed over the towline catching her propeller and when the towing vessel proceeded, the "JOHNNY AND SISTERS II" was towed stern-on for a short period. The result was that the engine shifted and the block cracked.

15. Crew and Experience

The "JOHNNY and SISTERS II" was manned by competent, able seafarers. The skipper/owner had over 27 years fishing experience and had been skipper of the "JOHNNY AND SISTERS II" since the vessel was brought into service in 1978. He held a Fishing Master Certificate of Competency issued in 1975. He was recognized as an excellent fisherman and skipper, and although stated to be a cautious person with considerable respect for the sea, often fished the vessel in adverse weather. Two other vessels the "WET & WILD" and the "LITTLE DARIN" are owned by his company.

The remaining crew, although not certificated, and not required to be by regulation, had from 2 months to 3 1/2 years continuous service on board the "JOHNNY AND SISTERS II" in addition to service on board other vessels. Three had survived previous mishaps at sea on other vessels prior to joining the "JOHNNY AND SISTERS II". Thus her crewmembers were considered to be experienced seafaring fishermen.

Findings

The loss of the "JOHNNY AND SISTERS II" occurred in an unknown position south of Newfoundland, on the Grand Banks, some time after 1845 December 3, 1989. The body of one of her 8-man crew was discovered floating in position 44°29.2'N., 52°36.0'W., at 0845 December 9, 1989, and recovered on board the "SCOTIAN SURF". The cause of the loss is unknown but, of the various possibilities, it appears that the most likely was that the vessel was overwhelmed by extreme adverse weather.

Accepting the theory that the vessel was overwhelmed suddenly, the following factors could also be considered as contributing:

- the vessel did not seek shelter when gale warnings were issued nor when the gale warning was upgraded to a storm warning early on the morning of December 3, 1989;
- although a storm warning was in effect, a water spout phenomenon which was neither predicted nor expected passed through the area;
- the crew were confident in the vessel's ability to sail and/or fish in adverse weather; and
- the vessel's EPIRB was not operational, however there is no regulatory requirement that an EPIRB be carried by a vessel of her size and class.

Other Findings

The vessel's last known position was approximately 20 miles further offshore than her certificate of inspection permitted.

No distress call was received by any Coast Guard Radio Station or by any vessel known to be in the area.

There was no daily reporting schedule in place which may have alerted the owner's representative and subsequently SAR to a distress.

Some 5½ days had elapsed between the vessel's last known position and the vessel being reported overdue.

The liferaft recovered, after examination, was determined to have met the manufacturer's specifications and Coast Guard requirements and indicated, that in all probability, it had not been boarded by survivors.

The Canadian Coast Guard is currently studying modifications to sea anchors and their fastenings to inflatable liferafts.

Marine Casualty Investigations
110 O'Connor Street
Ottawa, Ontario
K1A 0N5

OTTAWA, ONTARIO
JUNE, 1990.

Abbreviations

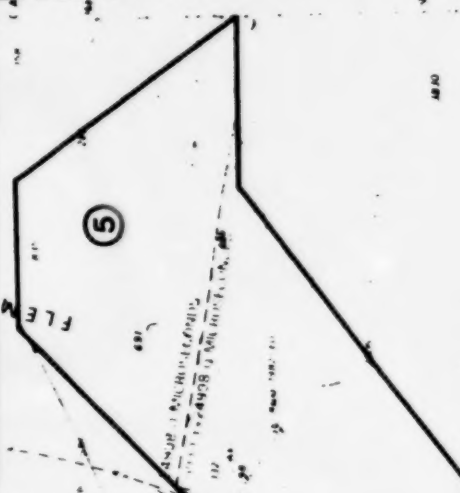
CASP	Computer Assisted Search Planning
CANSARP	Computer Assisted Nautical Search and Rescue Plan
CSS	Coordinator Surface Search
CCGS	Canadian Coast Guard Ship
CB R/T	Citizens Band Radiotelephone
EPIRB	Emergency Position Indicating Radio Beacon
EPIB	Emergency Position Indicating Buoy
ETA	Estimated Time of Arrival
HMCS	Her Majesty's Canadian Ship
IMO	International Maritime Organization
MRSC	Marine Rescue Sub-Centre
MRSC (N)	Marine Rescue Sub-Centre, Newfoundland
RCC	Rescue Coordination Centre
RCMP	Royal Canadian Mounted Police
SAR	Search and Rescue
SMC	SAR Mission Coordinator
SSB R/T	Single Side Band, Radio-telephone
VHF R/T	Very High Frequency Radio-telephone

CURRENT Inshore Branch
ABRADOR Composite coteau



"JOHNNY AND SISTERS II"
REDUCED SECTION
OF CHS CHART
NO. 4001
DEPTHS IN
METRES

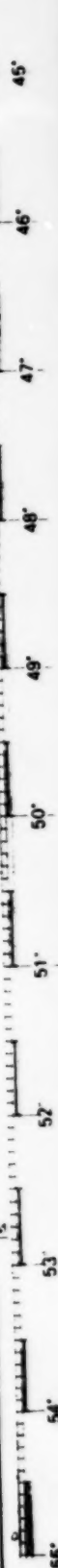
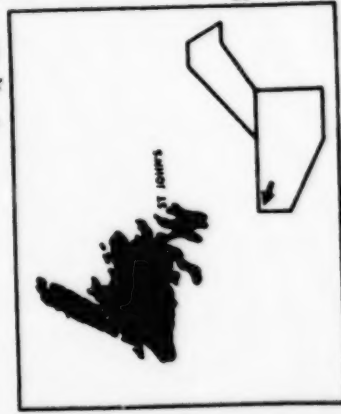
- ① BODY RECOVERED
9 DECEMBER 1989
- ② LAST
KNOWN
POSITION
3 DEC 1989
- ③ LIFERAFT
RECOVERED
12 DEC 1989
- ④ AREA WHERE THE BODY WAS
RECOVERED AND VARIOUS DEBRIS
WAS SIGHTED OR RECOVERED



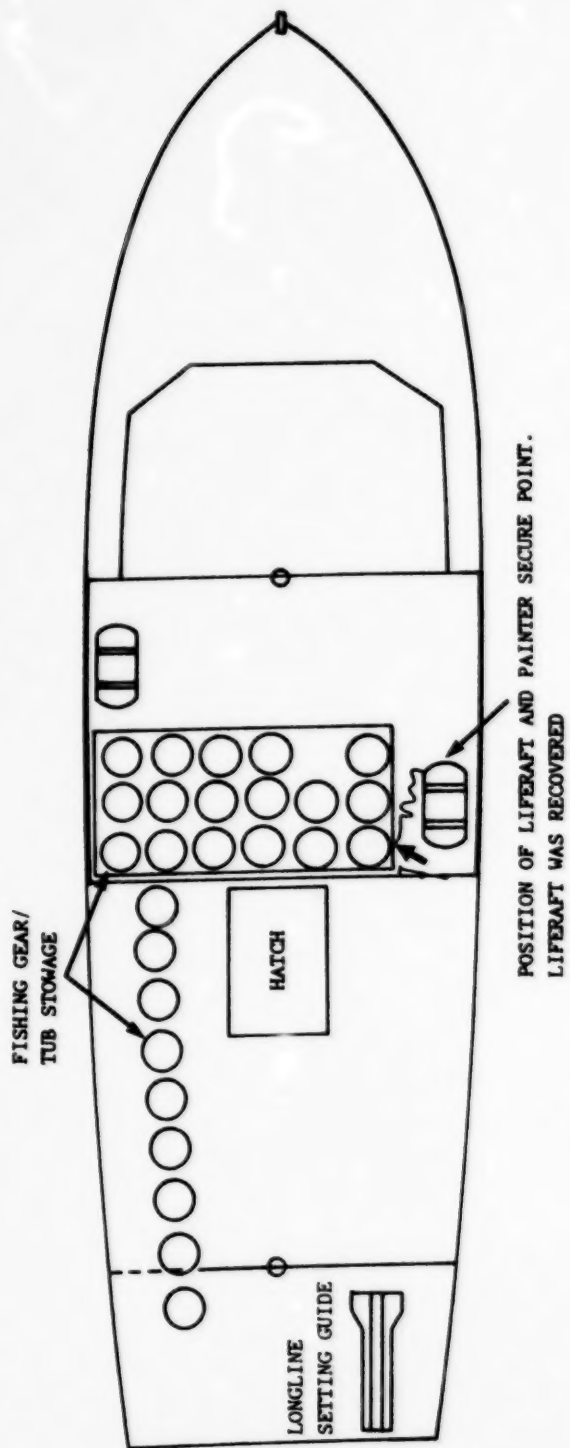
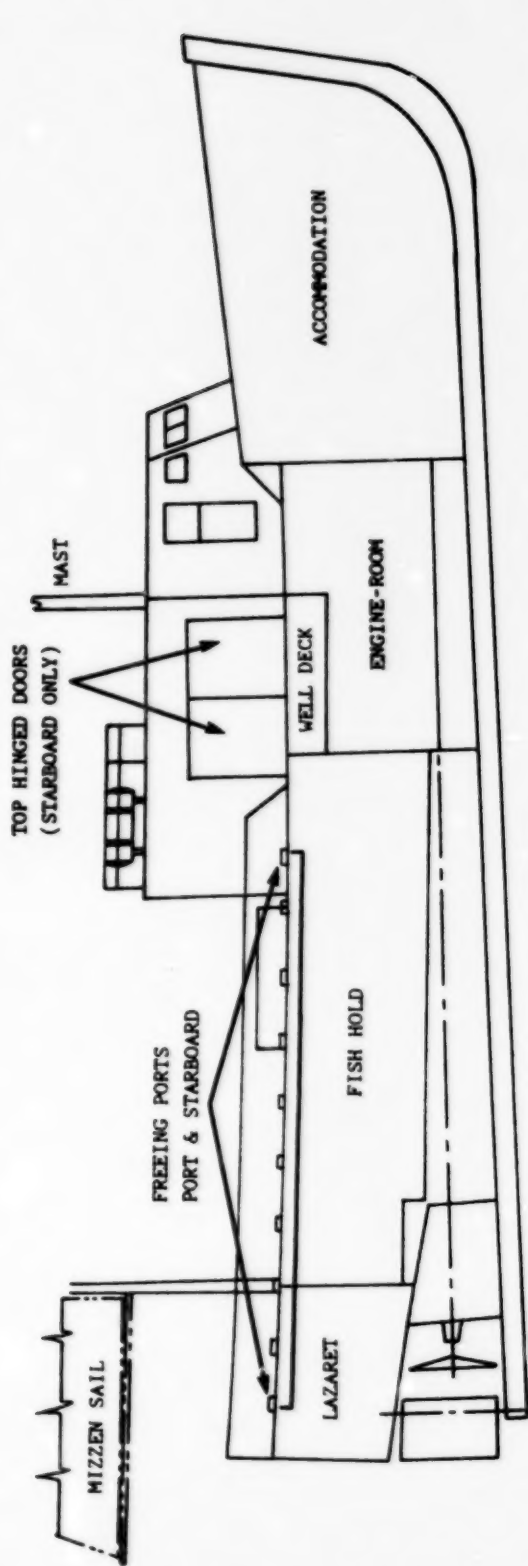
GRAND BANKS OF NEWFOUNDLAND
FISHING ZONE 4



- ⑤ CASP SEARCH AREA
(COMPUTER ASSISTED
SEARCH PLANNING
SYSTEM)
- ⑥ A TRACK TO
BANQUEREAU
BANK
- ⑦ "JOHNNY AND SISTERS II"
ESTIMATED POSITION
AT 7:30, 4 DEC 1989
- ⑧ CANSARP
SEARCH
AREA



OUTLINE GENERAL ARRANGEMENT OF A FISHING VESSEL
SIMILAR TO "JOHNNY AND SISTERS II"



ANNEX I

ENVIRONMENT CANADA, ATMOSPHERIC ENVIRONMENT SERVICE

"JOHNNY AND SISTERS II"

There is some doubt whether the "JOHNNY AND SISTERS II" was a victim of the December 7-9 storm or of a previous storm of December 3-4. Both storms will be described:

Storm of December 3-4, 1989

On Sunday, December 3, a double storm centre moved off the eastern seaboard near Nantucket and deepened rapidly. As it continued to move towards the northeast, southeasterly winds of 50 to 60 knots developed overnight. Early Monday morning, December 4, as a frontal wave associated with the storm moved by to the East, winds changed abruptly to westerly and dropped in strength to about 20 knots.

The air associated with this frontal wave was very moist and unstable, and several ships reported moderate to heavy rain and thunderstorms. While there are no confirming reports, it would be reasonable to assume the existence of lightning and wind squalls with these thunderstorms. One captain of a 94 ft steel long liner gave a very vivid description of a water spout which knocked his vessel on its beam and turned it around several times. During this short period he described the winds as 80-100 knots and the seas as 'enormous'.

Gale warnings which had been in effect for some time were upgraded to storm warnings at 3:00 a.m. Sunday, December 3:

Issued at 3:00 a.m. NST Sunday 03 December for today and Monday:

Gale warning upgraded to storm warning. Winds northwest 15 knots diminishing to light late this morning. Winds increasing to southeast gales 35 this evening and to southeast gales 45 to 55 after midnight. Gales diminishing to southwest winds 15 to 25 Monday morning. Flurries ending this morning. Rain and snow beginning after midnight then tapering to showers Monday morning. Visibility fair to poor in precipitation temperatures near zero today and near plus 5 on Monday.

The gales were subsequently increased from southeast 45-50 to southeast 50-60 knots.

Issued at 8:00 pm NST Sunday 03 December for tonight and Monday with an outlook for Tuesday:

Storm warning continued. Winds variable 10 to 15 knots increasing to southeast gales 50 to 60 overnight. Gales diminishing to southwest winds 20 to 30 near noon Monday. Snow and rain beginning overnight tapering to flurries near noon Monday. Visibility fair to poor in precipitation. Turning milder overnight. Outlook for Tuesday.....strong southwesterlies.

Winds from Weather Buoy G138 gave peak winds from the southeast at 40 knots with gusts to 50. However, some ships in the area gave winds from the southeast ranging from 25 to 60 knots. Freezing spray was not forecast, nor was it reported.

The sea state forecasts issued Sunday evening, December 3 at 6:00 p.m. forecast wave heights to reach 6-7 metres overnight. Wave heights reached 8-9 metres by Monday morning. Again the sea state forecasts were slow in increasing wave height and under-forecast the wave height somewhat.

Sea state forecast for Newfoundland issued by the Newfoundland Weather Centre of Environment Canada at 6:00 p.m. NST on Sunday 03 December 1989 for tonight and Monday. The next scheduled forecast will be issued at 6:00 a.m. Forecast values are a combined wind wave and swell height for the open sea. Users are cautioned that heights may differ significantly in coastal waters and in depths less than 50 meters.

Southwestern Grand Banks seas 2 to 3 meters gradually increasing to 6 to 7 by Monday evening.

Storm of 7-9 December

This was the same weather system which caused the fatalities in the Gulf of St. Lawrence. A gale warning was issued for the southwestern Grand Banks at 2:30 a.m. on Wednesday December 6, for southerly gales of 35 knots to develop in the afternoon of Thursday, December 7.

Bulletin: Gale warning issued by the Newfoundland Weather Centre of Environment Canada at 2:30 a.m. NST on Wednesday 06 December 1989 for the following Newfoundland areas:

Attention Marine Interests: Northern Grand Banks, Southeastern Grand Banks, Southeastern Grand Banks: Southerly gales of 35 knots will spread over the

above mentioned areas Thursday in advance of a trough of low pressure. Further details follow in the marine forecast issued at 03:00 a.m. NST.

The gale warning was later upgraded to a storm warning at 3:30 a.m. Thursday, December 7, and called for westerly gales 40-50 knots. These storm force winds developed the following afternoon.

Bulletin: Storm warning issued by the Newfoundland Weather Centre of Environment Canada at 03:30 p.m. NST on Thursday 07 December 1989 for the following Newfoundland marine areas:

Attention Marine Interests: Northern Grand Banks, Southeastern Grand Banks, Southwestern Grand Banks: A low pressure centre is forecast to move northward into the Strait of Belle Isle tonight. A trough extending from the low will move across the Grand Banks tonight. Gale to storm force southeasterlies ahead of the trough will shift to gale to storm force westerlies behind it. Further details follow in the regular marine forecast to storm concurrently.

Part 2 of 2: Marine Forecast for Newfoundland issued by Environment Canada from the Newfoundland Weather Centre at 3:30 p.m. NST on Thursday 07 December 1989 for tonight and Friday with an outlook for Saturday. The next scheduled forecast will be issued at 8:00 p.m.

Southwestern Grand Banks: Gale warning upgraded to storm warning. Winds southerly 15 to 25 knots increasing to southeast gales 40 to 50 this evening then shifting to westerly gales 40 to 50 overnight. Westerly gales 40 to 50 on Friday. Rain changing to flurries Friday morning. Visibility fair in precipitation. Temperatures near plus 3 tonight and near minus one on Friday. Outlook for Saturday....strong westerlies.

These westerly gales of 40-50 knots persisted for several days as the low pressure system stalled just east of the Strait of Belle Isle. Advance notice of about 24-30 knots was given by the above storm warning. Vessels engaged in the SAR Johnny and Sisters II (HMCS Cormorant and CGS Alert) both reported winds of 35-50 knots from the northwest.

Freezing spray was not forecast nor was it reported by any vessel. However, the meteorological data buoy G138 appeared to give erroneous and sometimes missing data on December 8-9. This occurred when temperatures fell to near -2°C with winds of 40 to 50 knots. This may have been caused by freezing

spray or salt built up.

The 6:00 p.m. sea state forecast issued on Thursday December 7 had seas rising to 7-8 metres on the afternoon of December 8. In fact, the seas reached 9-10 metres and it was not until the 6:00 p.m. forecast of Friday December 8 that waves of 9-11 metres were forecast:

Sea state forecast for Newfoundland issued by the Newfoundland Weather Centre of Environment Canada at 6:00 p.m. NST on Thursday 07 December, 1989 for tonight and Friday. The next schedule forecast will be issued at 6:00 a.m. Forecast values are a combined wind wave and swell height for the open sea. Users are cautioned that heights may differ significantly in coastal waters and in depths less than 50 metres.

Southwestern Grand Banks. Seas 4 to 5 metres increasing to 7 to 8 Friday afternoon.

Sea state forecast for Newfoundland issued by the Newfoundland Weather Centre of Environment Canada at 6:00 p.m. NST on Friday 09 December 1989 for tonight and Saturday. The next scheduled forecast will be issued at 6:00 a.m. forecast values are a combined wind wave and swell height for the open sea. Users are cautioned that heights may differ significantly in coastal waters and in depths less than 50 meters.

Southwestern Grand Banks: Seas 9 to 11 metres.

A CF ship reported 5-8 metre waves while CGS ship on the Grand Banks reported 10 metres (albeit in 25 fathoms). However, in retrospect the sea state forecasts were probably somewhat slow in catching the speed with which the seas built.

Summary

- a. The storm of 7-9 December affecting both the Gulf of St. Lawrence and the Grand Banks was forecast to intensify rapidly, well before the onset of the northwesterly gales, with the result that storm warnings (Beaufort Force 10) were issued 24 hours in advance and about 30 hours before the first distress calls were received. Gale and Freezing Spray warnings had already been in effect for the previous 48 hours. The intensity of the storm was slightly under-estimated with the result that initial forecasts were predicting winds of 45 to 55 knots whereas ships at the scene experienced winds of 50 to 60 knots. The sea state forecasts did not reflect the rapidity with which the seas would build. While

<u>AIR</u>	<u>SEARCH HOURS</u>	<u>TOTAL HOURS</u> <u>INCIDENT</u>
Aurora 108	8.7	14.3
Aurora 101	19.0	29.6
Aurora 114	11.6	19.1
Aurora 113	3.3	7.5
Herc 1504	10.8	15.8
CF Buffalo 455	1.1	4.0
CF Labrador 303	--	2.4
Atlantic Airways R 05	10.8	20.1
USAF Herc 95824	13.4	27.1
USN P-3 4PS	4.8	10.8
USN P-3 H1734	5.5	12.5
<u>TOTAL</u>	<u>SEARCH 909.1</u>	<u>INCIDENT 1098.3</u>
<u>TOTAL AREA: 39890 sq/mi</u>		

Items recovered/sighted

<u>DAY</u>	<u>ITEM</u>	<u>POSITION</u>	<u>RECOVERED</u>	<u>POS. IDENT.</u>
09	Body	44 29.2N/52 33.0W	yes	yes
	Hatch cover	44 28.7N/52 29.0W	no	no
	Foam mattress	" "	no	no
	Plywood	" "	no	no
	Oil slick	" "	no	no
10	Ice chest door	44 17.0N/51 38.0W	yes	yes
	Planks	" "	yes	no
	Chair	44 30.0N/51 16.0W	yes	no
	Wheel house			
	wreckage	44.30.0N/51 12.0W	yes	yes
	Buoy	44 19.0N/51 35.0W	no	no
	Planks	44 03.0N/51 59.7W	no	no
11	Chair	44 25.0N/51 04.0W	yes	no
	Wood	44 11.2N/51 22.6W	yes	no
	Door	44 10.0N/51 24.0W	yes	yes
	Buoy	45 40.0N/45 01.0W	no	no
	White Cylinder	45 20.2N/48 46.0W	no	no
	Two Cylinders	44 00.0N/49 40.0W	no	no
	Rope	43 54.0N/49 39.0W	no	no
	Yellow objects	43 55.0N/49 34.0W	no	no
	Material	43 57.0N/49 41.0W	no	no
12	Raft	43 57.0N/49 25.2W	yes	yes
	Wood debris	44 00.0N/49 29.3W	no	no

ANNEX 3

Description of the equipment found with the liferaft:

- one external light with sea cell battery
- one internal light with sea cell battery
- one boarding ladder
- one CO2 cylinder c/w operating head Kidde Marine MK1
- two branch high pressure hoses c/w "Y" connection attached to the liferaft
- one CO2 cylinder packet
- external grab lines
- internal grab lines
- righting strap
- retaining strap for class "A" survival pack
- rescue line and quoit
- floating knife patch
- painter patch with approximately 19.81 m of painter attached
- one firing cable
- sea drogue line attached to the sea drogue patch
- two SRTU valves
- one topping-up valve in each arch tube
- one topping-up valve in floor

The following equipment was missing from the liferaft:

- one fibreglass liferaft container
- one Class "A" survival pack
- one set of paddles
- one floating knife
- one spare sea drogue

- approximately 3.05 m of painter line

The general condition of the liferaft was exceptionally good considering the length of time it was thought to be adrift. The CO₂ cylinder was empty of gas, the operating head, high pressure hoses, inflation valves, safety relief valves and topping-up (SRTU) valves, arch tube and floor topping-up valves were all tested and found to be functioning normally.

The canopy and buoyancy chambers were in good condition with no signs of wear or deterioration. All seams were intact. The reflective tape strips fastened to the canopy had all badly eroded. Stenciling on the canopy was badly faded and difficult to read. View ports on bow and stern were in good condition. The tapes on canopy opening (3) were all in place. The centre tape had pulled away from patch on the arch tube but was still tied to the webbing on the outer patch. Tape on port side was partially torn from patch on arch tube. The starboard tape was in good condition with no sign of separation. Rain catchment tubes were intact with the plug in good condition.

Both external and internal lights were intact. Batteries were fitted and had been activated.

Inner canopy was in good condition with two small holes, one on the starboard side, centre, and the second under the bow view port.

Arch tubes were in good condition and showed no signs of deterioration. Tubes were fitted with A4 1RL topping-up valves which were in working order.

The upper buoyancy chamber had a small amount of chafing on both sides of canopy opening. There was no leakage.

The lower chamber was in good condition and showed no signs of deterioration.

The sea floor showed a small amount of chafing on the starboard side near sea cell retaining patch. The reflective tape which is glued to the bottom of the floor to form a cross, had two strips running fore and aft almost completely worn away while a third piece running across the floor was solidly attached, but showed extensive cracking.

The four water pockets were found intact and in good condition. Each measured 58.06 cm² at the top and flared to 64.52 cm² at the bottom. They extended 30.48 cm below the bottom buoyancy chamber.

The CO₂ buoyancy pocket was found intact and in good condition. Righting Strap had pulled clear from the grab line

on the starboard side of the raft.

Sea cell (seawater batteries) retaining patch was intact and in good condition . Painter patch appeared to have had some strain exerted on the webbing loop. A small tear appears in the patch material around the loop which appeared to be pulled away under the patch.

The bonding material used in the construction of the raft is adequate. There is little sign of any seam or patch deterioration.

External grab lines were intact and in good condition. One retaining loop on the starboard side had the stitching broken free and the grab line hanging free. Due to that the righting strap had come loose at the point of attachment. The internal grab line was intact and in good condition.

The heaving line was tied in a mass to the external grab line with the quoit separated from the line. The recovery crew may have placed it in that position.

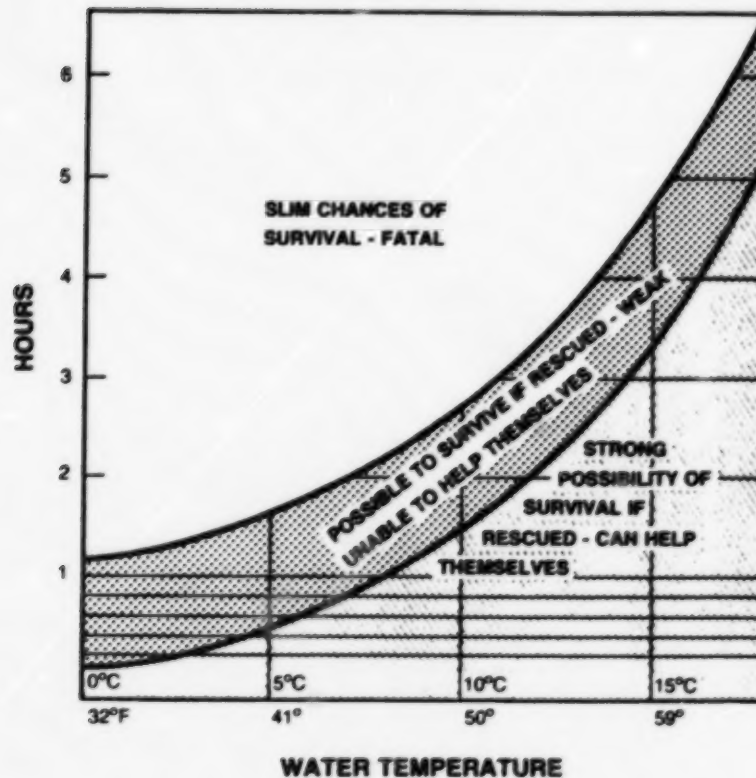
The sea anchor (drogue) line was attached to the drogue patch in its entire length. The drogue proper had been ripped free of the lines at the stitching on the line.

The painter line, 19.81 m in length, was subjected to a break test and the line parted at a pull of 453.6 kg. The CO2 cylinder operating cable was attached in place on the painter line and the doubler patch from the container exit port was still in place on the painter line.

For comparison purposes, a test was conducted on an identical sea anchor drogue which parted from its nylon rope bridle where the stitching secured it to the bridle when the strain had reached a pull of 226.8 kg. An identical sea anchor line parted when subjected to a pull of 453.6 kg.

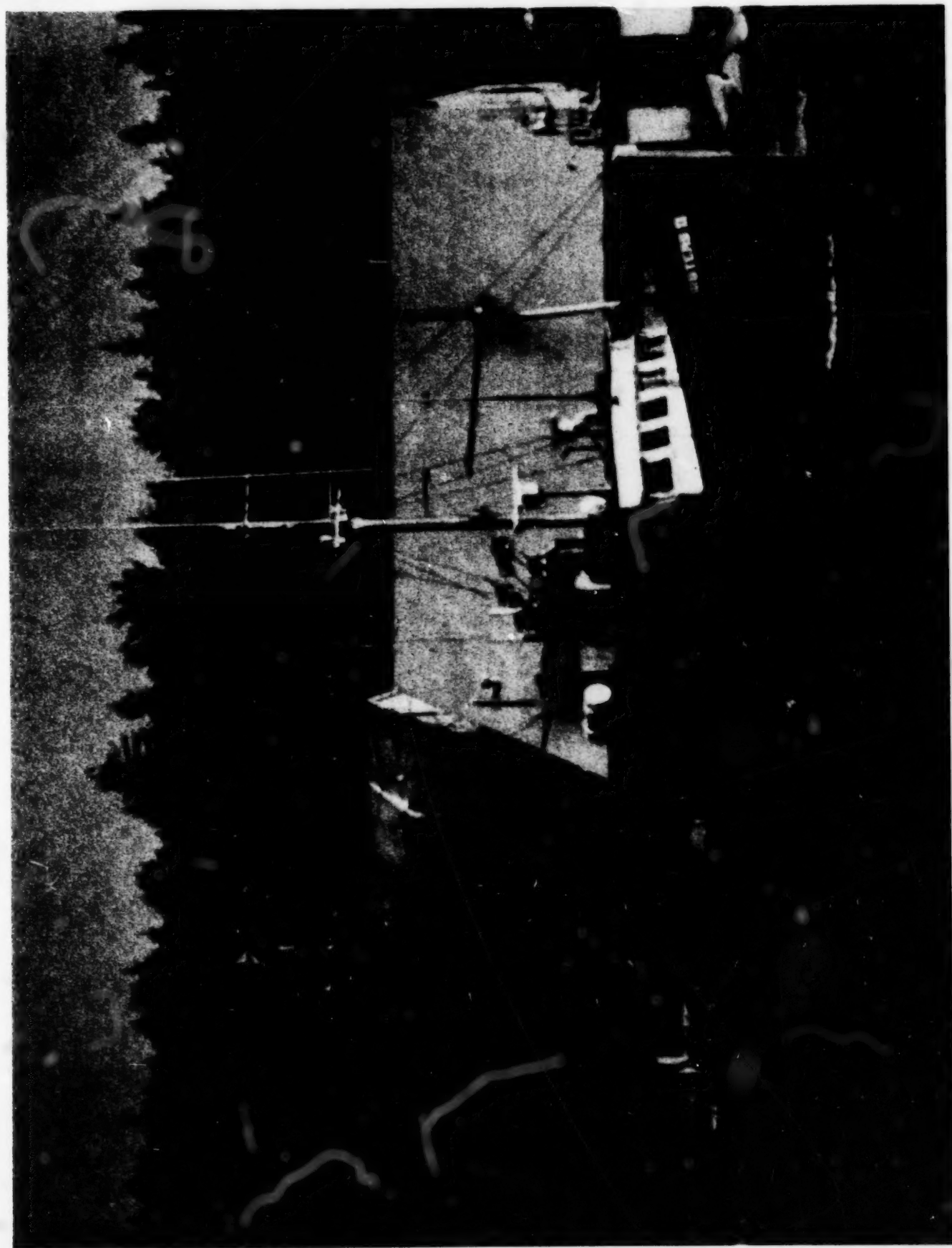
ANNEX 4

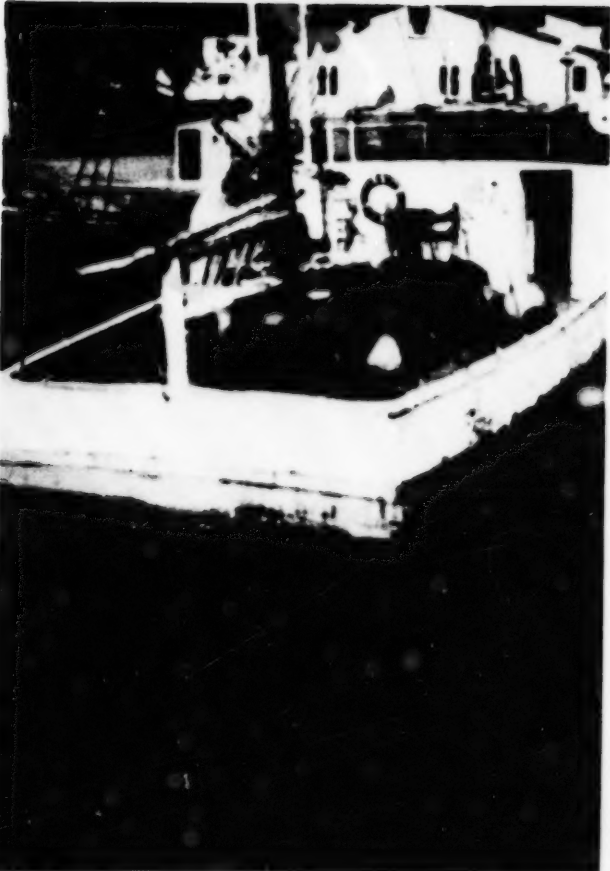
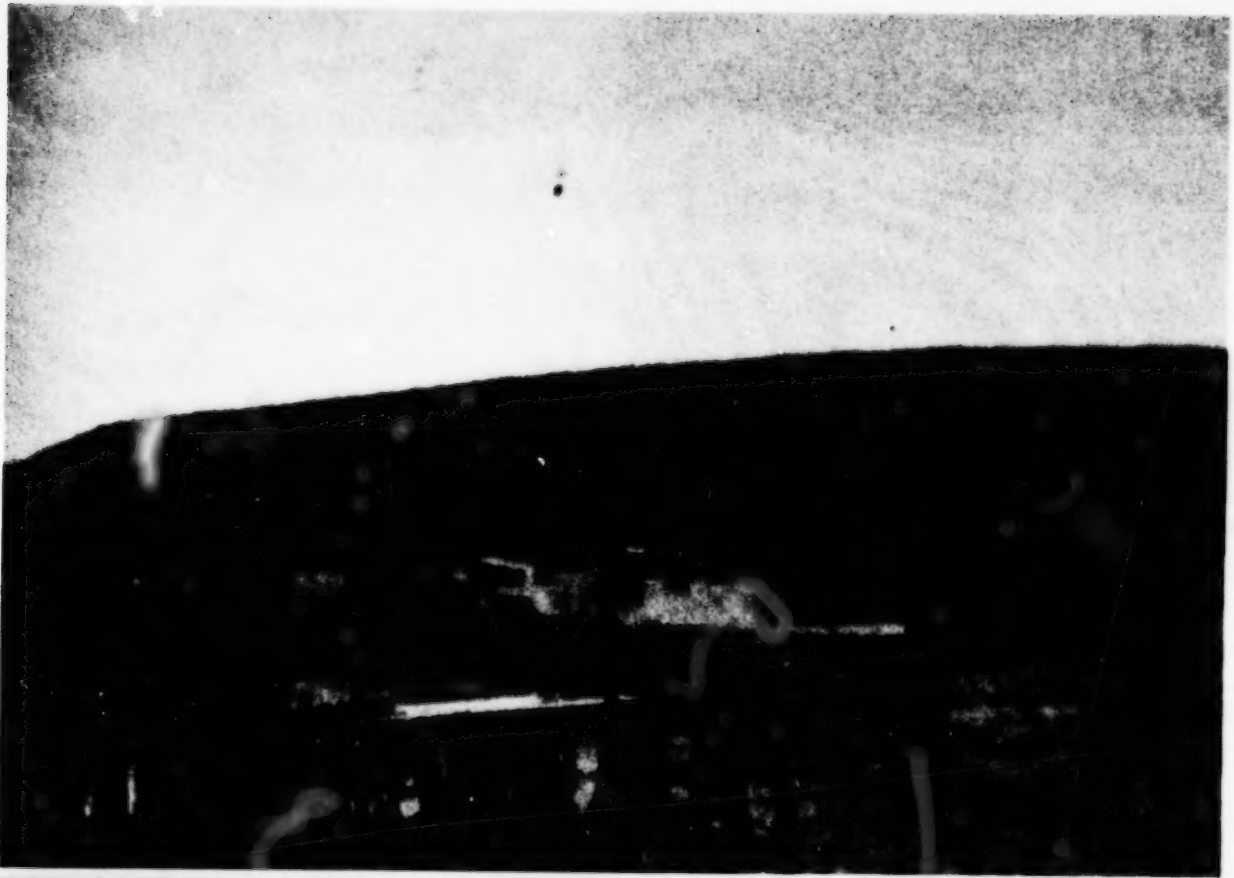
COLD WATER SURVIVAL



The accompanying graph shows average predicted survival times of average, adult humans in water of different temperatures. The figures are based on experimental cooling of average men and women who were holding still in ocean water and wearing a standard lifejacket and light clothing. The graph shows, for example, that predicted survival time is about 2½-3 hours in water of 10°C (50°F). Predicted survival time is increased by extra body fat and decreased by small body size. Although women generally possess slightly more fat than men they cool slightly faster due to their usually small body size. However, for comparable sizes, the man will cool faster.

"COLD WATER SURVIVAL"
CANADIAN RED CROSS





"JOHNNY AND SISTERS II"
at a Newfoundland port
in 1988.

"JOHNNY AND SISTERS II"
dans un havre de
Terre-Neuve en 1988.

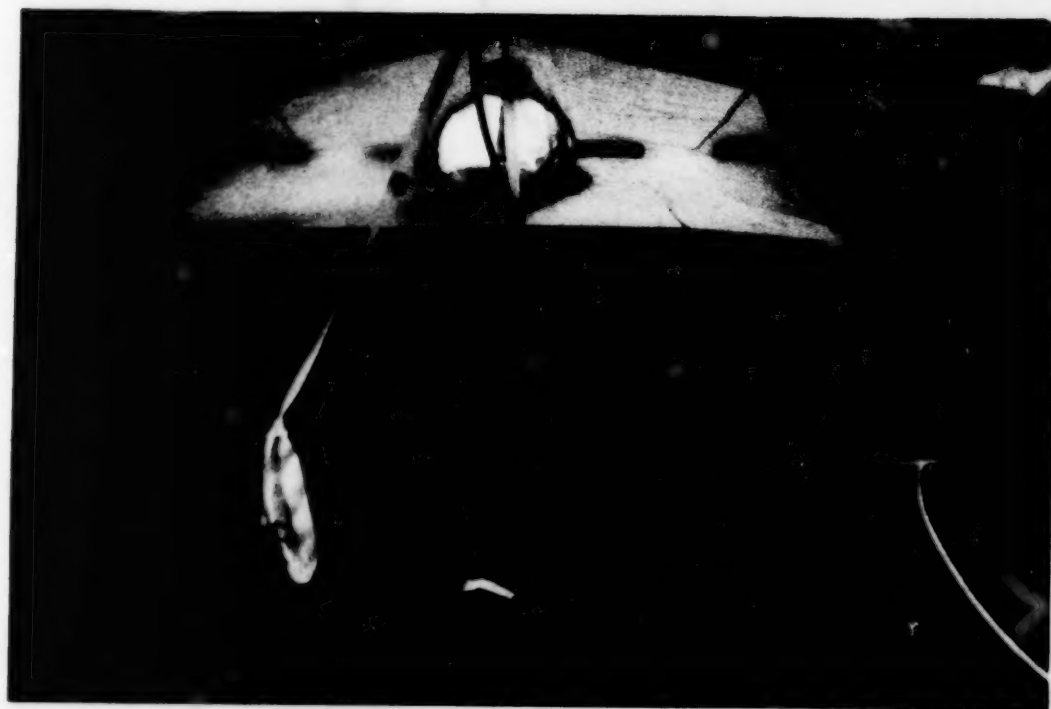


Ice chest door - pound board - superstructure stiffener
recovered during search.

Porte de glacière - épontille et raidisseur de
la superstructure récupérés pendant les recherches.



Model of "JOHNNY AND SISTERS II".
Modèle du "JOHNNY AND SISTERS II".



"JOHNNY AND SISTERS II" liferaft being examined
aboard the HMCS "CORMORANT" while at St. John's
December 14, 1989.

Examen du radeau de sauvetage du "JOHNNY AND SISTERS II"
à bord du NCSM "CORMORANT" à St. John's
le 14 décembre 1989.



Recovered liferaft "JOHNNY AND SISTERS II"
at DND liferaft shop, Halifax.

Radeaux de sauvetage du "JOHNNY AND SISTERS II"
récupéré à l'atelier de réparation du MDN.